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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,715	01/12/2004	Jukka Vesterinen	915-007.073	9752

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EXAMINER

CAO, HUEDUNG X

ART UNIT PAPER NUMBER

2821

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/755,715

Applicant(s)

VESTERINEN, JUKKA

Examiner

Huedung X. Cao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-13, 15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 9, 14, 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of: \_\_\_\_\_
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 01/12/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8, 10-13, 15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art (Specification, pages 1-4, and figure 1) in view of BROWN et al. (US 6388636 B1).

As per claim 1, Prior Art teaches "a device" (Prior Art, figure 1), comprising:

an at least partially plane antenna carrier with a first side and a second side, at least one first Printed Wiring Board (PWB) being attached to said first side of said antenna carrier and having a first radiation structure formed on it (Prior Art, figure 1, PWB 2, and pages 3, lines 4-27), and at least one second PWB being attached to said second side of said antenna carrier which Prior Art does not explicitly disclose.

However, Brown teaches that second PWB being attached to said second side of said antenna carrier is widely used in the art (Brown, see abstract, double sided printed circuit board, figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a second printed circuit board to Prior Art's antenna system, as taught by Brown doing so it would improve the gain of impedance matching of the antenna.

Claim 2 adds into claim 1, wherein said first and/or second PWBS are one layer PWBS that comprise at least one metallic layer and/or at least one dielectric layer (specification, pages 3, lines 11-27).

Claim 3 adds into claim 1, wherein said first and/or second PWBS further comprise at least one adhesive layer, and wherein said first and/or second PWBS are attached to said antenna carrier via said adhesive layer (specification, page 3, lines 4-9).

Claim 4 adds into claim 1, wherein a ground plane for said first radiation structure is at least partially formed by metallic elements of said device (specification, page 3, lines 11-27).

Claim 5 adds into claim 4, wherein said second PWB is electrically connected to said ground plane (specification, page 4, lines 9-13).

Claim 7 adds into claim 1, further comprising a protection layer that at least partially covers said first PWB (specification, page 4, lines 15-18).

Claim 8 adds into claim 1, further comprising at least one pogo pin that penetrates said antenna carrier to electrically contact said radiation structure of said first PWB (specification, page 3, line 29-page 4, line 13).

Claim 10 adds into claim 1, wherein said first radiation structure is essentially line-shaped (Prior art, figure 1, radiations 2-1 and 2-2; specification, page 3, lines 24-27).

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Claim 11 adds into claim 10, wherein said first radiation structure is at least partially bent (Prior art, figure 1, radiations 2-1 and 2-2; specification, page 3, lines 24-27).

Claim 12 adds in to claim 1, wherein said second PWB is essentially plane (Brown, see abstract, double sided printed circuit board, figure 1).

Claim 13 adds into claim 1, wherein said antenna carrier consists of a dielectric material (specification, page 3, lines 4-9).

Claim 15 adds into claim 1, wherein said device is a hand-held device, in particular a GPS-capable or Galileo-capable mobile phone (specification, page 2, lines 1-7).

Claim 17 is similar in scope to claim 1; therefore; it is rejected for the same reason.

Claim 18 claims a method based on the antenna system of claim 1; therefore; it is rejected for the same reason.

Claim 19 claims the computer program based on the antenna system of claim 1; therefore, it is rejected for the same reason.

Claim 20 claims a radio system is similar in scope to claim 1 except for at least one base station which Prior art does not explicitly disclose. However, it would have been obvious to one of ordinary skill in the art to include the base station to have a complete radio system.

***Allowable Subject Matter***

3. Claim 9, 14, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to teach the first PWB is positioned on said first side of the antenna carrier and said second PWB is positioned on the second side of the antenna carrier so that the first and second PWB at least partially overlap; a second radiation structure is formed on the first PWB, wherein the first radiation structure is tuned to a first frequency range and wherein the second radiation structure is tuned to at least one second frequency range.

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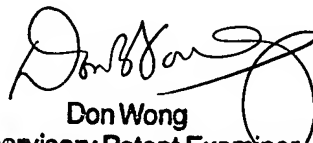
***Inquiries***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huedung Cao whose telephone number is (571) 272-1939.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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